

REMARKS

This Application has been carefully reviewed in light of the Office Action mailed December 18, 2002. Applicants appreciate the Examiner's consideration of the Application. In order to advance prosecution of this Application, Applicants have responded to each notation by the Examiner. Applicants respectfully request reconsideration and favorable action in this case.

Section 103(a) Rejections

The Examiner rejected under 35 U.S.C. § 103(a) Claims 31 and 33-40 as being unpatentable over "Non-Linear Optical Transmission Systems," by O'Mahony (*O'Mahony*) in view of U.S. Patent No. 5,361,319 to Antos et al., U.S. Patent No. 5,726,789 to Horiuchi et al. (*Horiuchi*), and U.S. Patent No. 5,570,438 to Fontana et al. (*Fontana*); Claim 32 as being unpatentable over *O'Mahony* in view of *Antos*, *Horiuchi*, and *Fontana*, and further in view of U.S. Patent No. 5,267,073 to Tamburello et al. (*Tamburello*); Claim 41 as being unpatentable over *O'Mahony* in view of *Antos*, *Horiuchi*, and *Fontana*, and further in view of European Patent Application EP 0 690 534 to Froberg (*Froberg*); Claims 42-45 and 47-49 as being unpatentable over *O'Mahony* in view of *Froberg* and *Horiuchi*; Claim 46 as being unpatentable over *O'Mahony* in view of *Froberg* and *Horiuchi* and further in view of U.S. Patent No. 4,093,919 to Watanabe (*Watanabe*); Claims 50-51 as being unpatentable over *O'Mahony* in view of *Froberg* and *Horiuchi*, and further in view of U.S. Patent No. 5,946,117 to Meli et al. (*Meli*); and Claim 52 as being unpatentable over *Froberg* in view of *Horiuchi*. Applicants respectfully traverse those rejections for the reasons discussed below.

Applicants respectfully submit that the combinations suggested by the Examiner fail to disclose, teach, or suggest the elements specifically recited in Applicants' claims. As an example, the suggested combinations fail to disclose, teach, or suggest, "said optical pulses are substantially free from chirp" (as recited in Applicants' independent Claim 31) or "a sequence of substantially chirp-free optical pulses" (as recited in Applicants' independent Claims 40, 42, and 52).

The Examiner relies on an improper combination to teach "optical pulses that are substantially free from chirp." According to the Examiner:

O'Mahony does not specifically disclose that the optical pulses are substantially free from chirp, but Fontana et al. teach that solitons may be produced substantially free from chirp (column 2, lines 27-29). It would have been obvious to a person of ordinary skill in the art to ensure that the solitons in the system suggested by O'Mahony, Antos et al., and Horiuchi et al. were free from chirp in order to keep the signal as free of distortion as possible.

(Office Action, page 4, paragraph 3)

O'Mahony and *Horiuchi*, however, cannot be properly combined. First, there is no teaching, suggestion, or motivation to combine the references. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. MPEP §2143.01.

Second, *O'Mahony* and *Fontana* teach away from their combination. It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983). According to *O'Mahony*:

Thus at the leading edge of the pulse positive chirp components travel faster and on the trailing edge slower, leading to a sharpening of the pulse as it travels down the fibre, ie pulse compression occurs. Thus provided operation is in the anomalous regime and that the frequency chirp is sufficiently large, dispersion leads to pulse narrowing rather than broadening.

It is clear from the above discussion that the shape of the pulse and its power are significant factors in determining the effects of dispersion in the anomalous regime. The basis of non-linear transmission is the determination of the pulse shape that will ensure that the narrowing effect due to non-linearity will exactly match the broadening effect due to linear dispersion, ie there is a balancing between the effects of SPM and GVD.

(*O'Mahony*, page 635, paragraphs 1-2). That is, *O'Mahony* uses chirp to balance a dispersion effect.

In contrast, *Fontana* discloses, "In an experiment it has been proved that the emission of solitons free of 'chirping' in a fibre laser can be obtained by the use of a band-pass filter of

a sufficiently large bandwidth." (Fontana, column 2, lines 27-29). That is, *Fontana* attempts to eliminate chirp. Thus, *O'Mahony* and *Fontana* teach away from their combination and cannot be properly combined.

The Examiner relies *O'Mahony* and *Froberg* to teach "a sequence of substantially chirp-free optical pulses." According to the Examiner, "O'Mahony further discloses that the signal modulator emits a sequence of substantially chirp-free optical pulses (pages 638-639, section 6, "Soliton Experiments")" (Office Action, page 9, paragraph 3), and "AT&T Corp. further discloses that the signal modulator emits a sequence of substantially chirp-free optical pulses (column 1, lines 46-581 column 2, lines 43-50)" (Office Action, page 13, paragraph 5).

O'Mahony and *Froberg*, however, fail to disclose, teach, or suggest a sequence of substantially chirp-free optical pulses. The Examiner admits, "*O'Mahony* does not specifically disclose that the optical pulses are substantially free from chirp (Office Action, page 9, paragraph 3). Moreover, the referenced passage of *Froberg* fails to disclose, teach, or suggest a sequence of substantially chirp-free optical pulses.

Consequently, at a minimum, the combinations suggested by the Examiner fail to disclose, teach, or suggest, "said optical pulses are substantially free from chirp" or "a sequence of substantially chirp-free optical pulses" as recited in Applicants' claims. For at least these reasons, the cited references fail to disclose, teach, or suggest the elements specifically recited in Applicants' independent Claims 31, 40, 42, and 52.

Applicants' dependent claims are allowable based on their dependence on the independent claims and further because they recite numerous additional patentable distinctions over the prior art. Because Applicants believe they has amply demonstrated the allowability of the independent claims over the prior art, and to avoid burdening the record, Applicants have not provided detailed remarks concerning these dependent claims. Applicants, however, remain ready to provide such remarks if it becomes appropriate to do so.

Applicants also note that the Examiner rejected the pending claims under seven (7) separate Section 103 rejections using various combinations of six (6) different references. In accordance with the Manual of Patent Examining Procedure (MPEP), such piecemeal examination should be avoided as much as possible. "The Examiner ordinarily should reject each claim on all valid grounds available, avoiding, however, undue multiplication of references." MPEP 707.07(g) Piecemeal Examination. Accordingly, should the Examiner continue the rejection of any of the pending claims, Applicant respectfully requests that the Examiner limit such rejections to the best available art in order to not unduly burden Applicant in responding to any such rejection. As discussed above, however, Applicant submits that the claims, as amended, are patentable over the cited references.

Applicants respectfully request reconsideration and allowance of independent Claims 31, 40, 42, and 52 and all claims that depend on these claims.



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CONCLUSION

Applicants have made an earnest attempt to place this case in condition for allowance. For at least the foregoing reasons, Applicants respectfully request full allowance of all the pending claims.

If the Examiner believes a telephone conference would advance prosecution of this case in any way, the Examiner is invited to contact Keiko Ichiye, the Attorney for Applicants, at the Examiner's convenience at (214) 953-6494.

Although Applicants believe no fees are due, the Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,

BAKER BOTTS L.L.P.
Attorneys for Applicants

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A handwritten signature in black ink, appearing to read "Keiko Ichiye".

APR 24 2003

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